



Novagen®

Protein Dialysis & Concentration products

Featuring:

- D-Tube™ Dialyzers
- D-Tube96™ Dialyzer
- Electroelution Kit
- U-Tube™ Concentrators

www.merckbio.eu/DTUBE
www.merckbio.eu/UTUBE

CONTACT US:

Country	Orders	Technical Support	Country	Orders	Technical Support
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Denmark	00800 1166 8811	00800 1166 8811	Portugal	00800 1166 8811	00800 1166 8811
Finland	00800 1166 8811	00800 1166 8811	Spain	00800 1166 8811	00800 1166 8811
France	0800 699 620	0800 126 461	Sweden	00800 1166 8811	00800 1166 8811
Germany	0800 6931 000	0800 100 3496	Switzerland	00800 1166 8811	00800 1166 8811
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D-Tube™ Dialyzers: Maximizing convenience and recovery

D-Tube™ Dialyzers are easy-to-handle dialyzers in a capped centrifuge tube format with dialysis membrane windows for buffer exchange and removal of solutes like urea or detergents while providing > 97% sample volume recovery. The disposable, single-use tubes require no syringes, centrifuge, or laborious steps to manipulate small sample volumes. The sample is added and removed using a standard laboratory pipet. D-Tube Dialyzers are available with molecular weight cut-offs from 3.5 to 14 kDa and are designed with three volume capacities: mini (10–250 µl), midi (50–800 µl), and maxi (100–3000 µl). The membrane is ultra-clean, EDTA-treated regenerated cellulose, sulfur- and heavy metal-free. Each kit contains 10 D-Tube Dialyzers and one floating rack that can hold up to four devices in an exchange buffer.



D-Tube™ Dialyzer Features

- Easy-to-handle dialyzers for buffer exchange and removal of urea and detergents
- One-step procedure that does not require syringes or any special equipment
- Sample recovery > 97%
- Protease-, RNase-, and DNase-free
- Ideal for electroelution

Volume capacities and molecular weight cutoff (MWCO) values for D-Tube Kits

D-Tube Size	Volume (µl)	MWCO* (kDa)	Cat. No	Price £	Price €
Mini	10 to 250	6–8	71504-3	38	51
		12–14	71505-3	38	51
Midi	50 to 800	3.5	71506-3	66	80
		6–8	71507-3	66	80
Maxi†	100 to 3000	3.5	71508-3	79	99
		6–8	71509-3	79	99
		12–14	71510-3	79	99
Product		Size	Cat. No.	Price £	Price €
Floating Rack, Mini		10 racks	71512-3	9	14
Floating Rack, Midi		10 racks	71513-3	11	17
Floating Rack, Maxi		10 racks	71514-3	14	22

* For conversion purposes, 10 bp or 20 nt is approximately 6.5–6.6 kDa

† The D-Tube Dialyzer Maxi kits are provided with two interchangeable caps to adjust the vessel volume to better accommodate smaller samples (100–2000 µl) and larger samples (2000–3000 µl)



D-Tube™ Dialyzers Mega Features

- Efficient dialysis of larger volume samples - 10, 15 and 20 ml
- Large membrane surface with MWCO of 3.5 or 6-8 kDa
- Convenient sample addition - no syringes necessary
- Ideally suited for buffer exchange of protein samples into a physiologically relevant buffer prior to refolding optimization screening with the iFOLD® Protein Refolding System 1

Product	MWCO	Volume	Kit Size	Catalog No.	Price £	Price €
D-Tube™ Dialyzer Mega	3.5 kDa	3–10 ml	10 tubes	71739-3	84	112
	3.5 kDa	3–10 ml	50 tubes	71739-4	338	450
	6–8 kDa	3–10 ml	10 tubes	71740-3	84	112
	6–8 kDa	3–10 ml	50 tubes	71740-4	338	450
D-Tube™ Dialyzer Mega	3.5 kDa	10–15 ml	10 tubes	71742-3	90	119
	3.5 kDa	10–15 ml	50 tubes	71742-4	360	476
	6–8 kDa	10–15 ml	10 tubes	71743-3	90	119
	6–8 kDa	10–15 ml	50 tubes	71743-4	360	476
D-Tube™ Dialyzer Mega	3.5 kDa	15–20 ml	10 tubes	71745-3	96	126
	3.5 kDa	15–20 ml	50 tubes	71745-4	382	502
	6–8 kDa	15–20 ml	10 tubes	71746-3	96	126
	6–8 kDa	15–20 ml	50 tubes	71746-4	382	502
Floating Rack, Mega			10 racks	71748-3	16	25

High Throughput Dialysis of 96 Samples with Maximum Convenience and Recovery

The D-Tube96™ Dialyzer, 6–8 kDa and D-Tube96 Dialyzer, 12–14 kDa offer the same great features as our D-Tube™ Dialyzers Mini in convenient, 96-tube format for high throughput applications. D-Tube™ Dialyzers are easy-to-handle dialyzers with large dual membranes for efficient and fast dialysis. The membrane is ultra clean, EDTA-treated regenerated cellulose, sulfur- and heavy metal-free and available in molecular weight cutoffs of 6–8 kDa or 12–14 kDa.



The D-Tube™ Dialyzers Mini have a capacity of 10–250 µl and are ideal for small samples. The samples are added and removed using a standard laboratory pipet, multichannel pipet, or by robotic dispensing. The D-Tube96™ Dialyzers are ideal for protein, oligonucleotide, RNA, and DNA samples that require dialysis for downstream applications in a high-throughput format. Extracted proteins are compatible with most downstream applications, such as MALDI-MS, antibody production (animal immunization), HPLC, peptide mapping, and functional assays. D-Tube96 Dialyzers are ideally suited for buffer

exchange of protein samples into a physiologically relevant buffer after screening for optimal refolding conditions with the iFOLD™ Protein Refolding Systems. Each kit contains a floatable rack with 96 D-Tube™ Dialyzers, 96 caps (for storage of unused mini D-Tube96™ Dialyzers), and an adhesive aluminum plate sealer. If fewer than 96 tubes are required, excess tubes can be removed from the modular device and saved for use at a later time.

Product Description	MWCO	Sample Volume	Cat. No.	Price £	Price €
D-Tube96™ Dialyzer, 6–8 kDa	6–8 kDa	10–250 µl	71712-3	216	333
D-Tube96™ Dialyzer, 12–14 kDa	12–14 kDa	10–250 µl	71713-3	216	333

Electroelution: Recover proteins and other biological molecules from gels

Following separation of biomolecules by agarose or polyacrylamide gel electrophoresis, electroelution offers a means to extract the sample of interest by applying an electric current to the excised gel band. The combination of D-Tube™ Dialyzers and the D-Tube™ Electroelution Accessory Kit provides a unique tool for extraction of any protein, protein-protein, or protein-DNA complexes from non-denaturing and denaturing (SDS) polyacrylamide gels, and for extraction of oligonucleotides, RNA, and DNA from both polyacrylamide and agarose gels. The D-Tube Electroelution Accessory Kit provides three D-Tube supporting trays that fit into most horizontal electrophoresis units and optimized reagents for protein and nucleic acid precipitation following electroelution.

Minimum electroelution times to extract samples from polyacrylamide and agarose gels

POLYACRYLAMIDE GELS		
	Protein Size (kDa)	Elution Time* (min)
Protein	14	35–45
	19–26	45–55
	29	55–65
	40	60–70
	45	65–75
	50	75–85
	66	85–95
	81	105–115
DNA	DNA Fragment Size (bp)	Elution Time† (min)
	100	10–20
	300	15–25
	500	20–30
	822	25–35
	1044	30–40
RNA	RNA Fragment Size (nt)	Elution Time† (min)
	100	15–25
	400	25–35
	600	35–45
Oligos	Oligonucleotide Size (nt)	Elution Time† (min)
	15–100	10–20
AGAROSE GELS		
DNA	DNA Fragment Size (bp)	Elution Time‡ (min)
	100–200	10–20
	500–700	15–20
	1000	20–30
	4361	25–35
	6557	45–55
	9416	55–65
	23130	70–80

Note: electroelution times shown in this table are for D-Tube™ Midi; optimum times depend on the sample contents. For each D-Tube Midi, the gel piece should not exceed 0.5 cm × 1 cm. Additional information about optimum electroelution times for D-Tube™ Mini and Maxi varieties is available in TB422 at www.novagen.com

*Minimum time recommended for elution of protein from a 10% SDS-polyacrylamide gel at 100 V

† Minimum time recommended for elution of DNA or RNA fragments from a native or denaturing 4% polyacrylamide gel at 100–150 V

‡ Minimum time recommended for elution of DNA fragments from a 1% agarose gel at 80–110 V

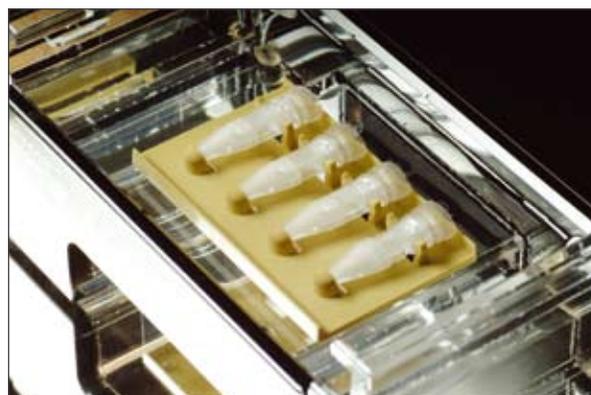
Typical recoveries using D-Tube™ Dialyzer Kits

Sample Type	Method	Typical Recovery
Sample in solution	Dialysis	> 97%
DNA or RNA in agarose gel slice	Electroelution	> 90%
Oligonucleotides, DNA, or RNA in polyacrylamide gel slice	Electroelution	> 90%
Protein in polyacrylamide gel slice	Electroelution	60%

Electroelution Kit Features

- Efficient extraction of protein, protein-protein, and protein-DNA complexes, oligonucleotides, DNA, and RNA from 1D- and 2D-pol acrylamide and agarose gels
- More than 60% protein recovery in less than 2 hours
- More than 90% recovery of oligonucleotides, RNA, and DNA of 15 nucleotides to 80 kbp
- Procedure compatible with a variety of downstream applications including MALDI-MS, functional assays, and HPLC
- Simultaneous electroelution from multiple samples

Product	Size	Cat. No.	Price £	Price €
D-Tube™ Electroelution Accessory Kit	1 kit	71511-3	37	61



Concentrate with Confidence



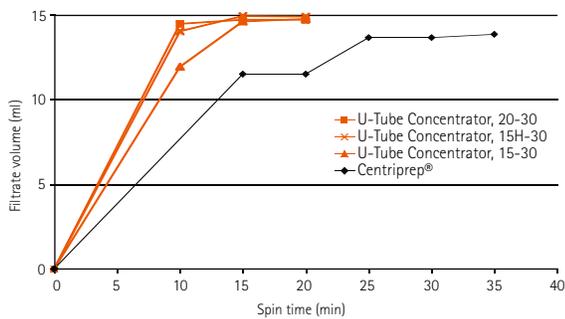
U-Tube™ Concentrators are ultra-filtration spin concentrators for use with most biological samples, including protein or nucleic acid solutions. The devices feature a vertical membrane design which limits membrane fouling. An integrated Dead-Stop-Volume minimizes the risk of concentrating to dryness. U-Tube Concentrators are available with a low protein binding polyethersulfone (PES) membrane in a variety of volumes and molecular weight cut-offs. Select

U-Tube Concentrators featuring ultra-low protein binding Hydrosart® membranes, for use when quantitative sample recovery is required. (Cat. No. 71875-3, 71875-4, 71881-3, 71881-4, 71882-3, 71882-4). In a single spin of 10 to 30 min, samples can be concentrated 30 to 100-fold with recoveries greater than 95%.

Manufactured by Sartorius Stedim. Protected under US Patent 5,647,990.

U-Tube™ Concentrators 15-30, 15H-30, 20-30

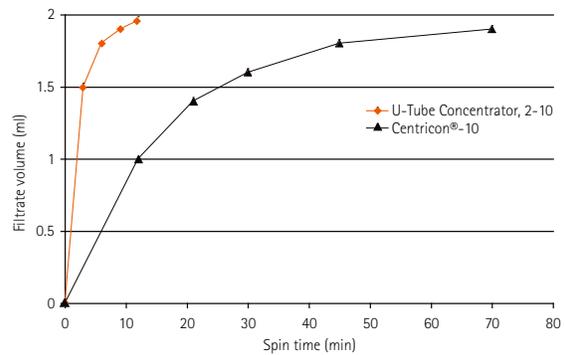
- ❖ 30 kDa MWCO
- ❖ 1.0 mg/ml BSA (66.4 kDa)
- ❖ 3,000 x g* in swing out rotor



*Centriprep run at published max RCF 1,500 x g

U-Tube™ Concentrators 2-10

- ❖ 10 kDa membrane, 2 ml Sample Volume
- ❖ 1.0 mg/ml BSA (66.4 kDa) in 0.15 M NaCl
- ❖ 5,000 x g in 25° fixed angle centrifuge



U-Tube™ Concentrator	Cat. No.	Size	MWCO (DA)	Capacity (ml)		Price £	Price €
				Fixed	Swinging		
500-3	71872-3	10 U-Tubes	3,000	0.5	n/a	19	26
	71872-4	25 U-Tubes				42	58
500-10	71873-3	10 U-Tubes	10,000	0.5	n/a	19	26
	71873-4	25 U-Tubes				42	58
500-30	71874-3	10 U-Tubes	30,000	0.5	n/a	19	26
	71874-4	25 U-Tubes				42	58
2H-2*	71875-3	10 U-Tubes	2,000	2.0	3.0	23	31
	71875-4	25 U-Tubes				51	71
2-10	71876-3	10 U-Tubes	10,000	2.0	3.0	22	30
	71876-4	25 U-Tubes				50	69
2-30	71877-3	10 U-Tubes	30,000	2.0	3.0	22	30
	71877-4	25 U-Tubes				50	69
6-3	71878-3	10 U-Tubes	3,000	6.0	6.0	26	36
	71878-4	25 U-Tubes				60	84
6-10	71879-3	10 U-Tubes	10,000	6.0	6.0	26	36
	71879-4	25 U-Tubes				60	84
6-30	71880-3	10 U-Tubes	30,000	6.0	6.0	26	36
	71880-4	25 U-Tubes				60	84
15H-5*	71881-3	10 U-Tubes	5,000	12.5	15.0	43	59
	71881-4	25 U-Tubes				98	137
15H-30*	71882-3	10 U-Tubes	30,000	12.5	15.0	43	59
	71882-4	25 U-Tubes				98	137
20-3	71883-3	10 U-Tubes	3,000	14.0	20.0	50	70
	71883-4	25 U-Tubes				114	160
20-10	71884-3	10 U-Tubes	10,000	14.0	20.0	50	70
	71884-4	25 U-Tubes				114	160
20-30	71885-3	10 U-Tubes	30,000	14.0	20.0	50	70
	71885-4	25 U-Tubes				114	160

*Feature ultra-low protein binding Hydrosart® membranes.

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Related Literature:

D-tubes: Innovations 25 & 27, PCR Tools, D-Tube™ Dialyzers Mega Kits Flyer, Protein Purification & Detection Tools, Novagen® Catalog 2009/2010
U-tubes: Innovations 29, U-Tubes flyer Novagen® Catalog 2009/2010

